



**UNIVERSITI PUTRA MALAYSIA**

**APPLICATION OF PROJECT MANAGEMENT PRINCIPLES  
IN THE PUBLIC SECTOR'S ARCHITECTURAL DESIGN  
PRACTICE**

**REYMUND R. SANDANASAMY**

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**APPLICATION OF PROJECT MANAGEMENT PRINCIPLES  
IN THE PUBLIC SECTOR'S ARCHITECTURAL DESIGN  
PRACTICE**

By

**REYMUND R. SANDANASAMY**

**Thesis Submitted to the School of Graduate Studies,  
Universiti Putra Malaysia, in Fulfilment of Requirement  
for the Degree of Master of Science**

**August 2002**



## DEDICATION

*“ In memory of my beloved father,  
who always had positive outlook on me,  
in good times and in bad times – had trust in me.”*

*“ Almighty God, I thank thee that thou hast heard me.  
And I know thou hears me always.”*

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfillment of the requirement for the degree of Master of Science

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**Faculty: Engineering**

The implementation of MS-ISO 9000 Standards in Public Works Department of Malaysia, had an impact on the future direction of the project management phenomenon in the architectural design practice. It is through this implementation exercise that the public sector's architectural design practice made its first attempt to understand the concept of project management and its philosophy. The MS-ISO 9000 Standards which incorporates project management practice in its guidelines are the main source of direction and guiding principles for PWD's architectural design practice. Hence this saw the need for project management thinking in the public sector.

The main thrust of this study is to investigate and ascertain through questionnaire survey, the adoptability and relevancy of project management principles in the public sector's architectural design practice. A total of 90

survey returns were received, which represented 81.8 percent of the total 110 questionnaire forms distributed. The sample population for the study is focused on the managerial and professional level of the public sector's architectural design practice. The data gathered through various survey instruments were subjected to rigorous statistical analysis with the use of Statistical Package for Social Science, version 10.5 (1999) using descriptive and correlation statistical analysis.

It was found that majority of the architects recognize the characteristics of project management and its relevancy in their creative orientated practice. Thus, it is evident in the survey findings that project management principles as defined in this thesis is applicable in the public sector's architectural design practice, and generally has increased the awareness of the architects towards time, cost and quality requirements of the projects. The elements of system approach namely project organization mission, project objectives, project goals and short-term targets are found in the PWD's architectural design practice. All these elements contribute to the functioning of the architectural design practice. It is therefore apparent from the survey that project management principles, after its inception, contributes to the overall success of the PWD's building projects. However the thesis has also identified several drawbacks of the project management principles in the architectural design practice, but they do not adversely affect the contribution of the project management practice in the continuous success of the PWD's architectural practice.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia  
sebagai memenuhi keperluan untuk ijazah Master Sains

**APLIKASI PRINSIP-PRINSIP PENGURUSAN PROJEK  
DALAM PRAKTIS REKA BENTUK SENI BINA SEKTOR  
AWAM**

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Implementasi kualiti pengurusan ISO 900 dalam Jabatan Kerja Raya (JKR) Malaysia telah meninggalkan kesan yang mendalam terhadap penentuan hala tuju masa hadapan fenomena pengurusan projek dalam praktis reka bentuk seni bina. Menerusi langkah implementasi inilah, percubaan pertama telah dilakukan dalam praktis reka bentuk seni bina sektor awam untuk memahami konsep dan falsafah pengurusan projek. Jelasnya, kualiti ISO 900 yang menjalinkan praktis pengurusan projek dalam tataurusannya merupakan asas dan prinsip-prinsip yang menentukan hala tuju, dan dijadikan garis panduan bagi praktis reka bentuk seni bina JKR. Justeru, timbul kesedaran tentang keperluan penerapan corak pemikiran pengurusan projek dalam sektor awam.

Jelasnya, sasaran utama kajian ini adalah untuk menyelidik dan menentukan sejauh mana penerapan prinsip-prinsip pengurusan projek dan

kesesuaiannya dalam praktis seni bina sektor awam melalui kaedah tinjauan (survey) dengan menggunakan soal-selidik. Sehubungan dengan itu, sejumlah 90 maklum balas telah diterima hasil daripada tinjauan yang dijalankan, yakni mewakili 81.8 % daripada jumlah 110 borang soal-selidik yang diedarkan. Populasi sampel bagi kajian ini terdiri daripada kumpulan pengurusan dan professional dalam praktis reka bentuk seni bina di sektor awam. Data-data yang dikumpul melalui pelbagai instrumen ini pula tertakluk pada analisis statistik yang rapi dengan penggunaan SPSS (Statistical Package for Social Science) yang berbentuk deskriptif dan analisis statistik korelasi.

Pentingnya, didapati bahawa kebanyakan arkitek mengenali ciri-ciri pengurusan projek dan kaitannya dengan praktis mereka yang berteraskan kreativiti. Justeru, terbukti menerusi hasil tinjauan ini bahawa prinsip-prinsip pengurusan projek sebagaimana ditakrifkan dalam tesis ini, dapat diaplikasi dalam praktis reka bentuk seni bina di sektor kerajaan. Di samping itu, prinsip-prinsip ini juga, pada keseluruhannya telah mempertingkatkan kesedaran arkitek-arkitek tentang tuntutan faktor masa, kos, dan kualiti dalam pengendalian sesuatu projek. Di samping itu, dalam praktis seni bina JKR juga, terdapat elemen-elemen pendekatan sistem, khasnya misi organisasi projek, objektif-objektif dan matlamat projek serta sasaran jangka pendek. Kesemua elemen ini menyokong perjalanan praktis reka bentuk dalam bidang berkenaan. Malah tinjauan ini turut membuktikan hakikat bahawa setelah diaplikasi daripada peringkat awal, prinsip-prinsip

pengurusan projek berperanan menyumbang ke arah sukses yang berterusan bagi projek-projek binaan JKR.

Walau bagaimanapun tesis ini turut mengenal pasti beberapa kepincangan berhubung dengan penerapan prinsip-prinsip pengurusan projek dalam praktis reka bentuk seni bina. Meskipun demikian, kekurangan ini tidak sama sekali menjejaskan sumbangan pengurusan projek ke arah sukses berterusan dalam praktis reka bentuk seni bina JKR.



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Last but not least, I wish to express my deep appreciation to my family especially my mother, who has been the source of inspiration, motivation and encouragement for me to complete this research. Special appreciation to my wife and son for their understanding, sacrifice and encouragement during the times of dire need, without which this report would not have been successfully completed.

I certify that an Examination Committee met 23<sup>rd</sup> August 2002 to conduct the final examination of Reymund R. Sandanasamy on his Master of Science thesis entitled "Application of Project Management Principles in the Public Sector's Architectural Design Practice" in accordance with Universiti Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) regulation 1981. The Committee recommends that the candidate be awarded the relevant degree. Members of the Examination Committee are as follows:

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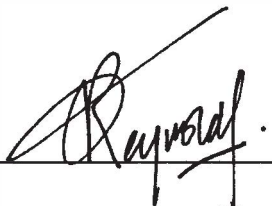
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## DECLARATION

I hereby declares that the thesis is based on my original work except for Quotations and citation which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UPM or other institutions.



---

**REYNOLDS REYMUND A/L SANDANASAMY**

Date : 11 October, 2002

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## LIST OF ABBREVIATIONS

A	Agree
BPM	Building Project Management
CPM	Critical Path Method
CIOB	Chartered Institute of Builders
D	Disagree
DK	Do Not Know
GERT	Graphic Evaluation and Review Technique
MS-ISO	Malaysia Standards – International Organization for Standardizations
IT	Information Technology
LESS	Least Cost Estimating and Scheduling
MBO	Management By Objectives
QMS	Quality Management System
PACE	Program Analysis Control and Evaluation
PDM	Precedence Diagramming Method
PERT	Project Evaluation Report Technique
PEP	Project Evaluation Procedures
PM	Project Management
PMI	Project Management Institute
PWD	Public Works Department
SA	Strongly Agree
SD	Strongly Disagree
SPSS	Statistical Package for Social Science

# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 Background**

#### **1.1.1 Rationale of the Study**

The study is primarily focused on the project management practices adopted in the Public Sector's Architectural Design Practice in Malaysia. A good project management practice at the design stage may save millions of dollars and improve the chances of completing ahead of schedule. Poor management in the design phase causes unnecessary delays and incur expensive losses. Despite all these adverse effects of poor management, there is very little studies carried out locally to explore how building projects are managed at design phase. According to Ghaleb & Hisham (2000), the planning phase is considered as the most time consuming phase and at the same time is the most rewarding one if done properly.

The public sector construction projects are important to any country developed or developing because it provides the basic amenities in terms of housing, transportation and infrastructure development that will compliment the economic growth of the nation. While most government organizations are concerned with the end products of construction they tend to overlook the process of managing design stage of a building project. If the process can be improved, there will be enormous savings in cost that will result in quality product within time and budget.

The Public Works Department of Malaysia was chosen for the study mainly because the department is an implementation agency responsible for providing infrastructure and public utilities specifically roads, water supplies, government department buildings, airports, and jetties to meet the needs of the national development (PWD, 2001).

The Director General of Public Works Department of Malaysia commented that several measures taken by the Public Works Department to increase efficiency has resulted in a reduction of delayed construction projects (Star, 2000). However, the government is aware that there are still weaknesses in the PWD's project implementation, for example in the areas of contract management, finalizing accounts and failure to meet the construction quality demanded by customers.

In the Seventh Malaysia Plan, the department was entrusted to develop approximately 12.2 billion ringgits worth of buildings, totaling to 5,144 government building projects (PWD, 2000). According to the PWD's Building Branch Performance report dated September 2000 indicated that only 69 projects were not tendered within the five-year plan of the Seventh Malaysia Plan. Among the projects implemented about 252 projects were considered contract overruns. However the department's building division's performance report shows that expenditure performance stands at 73.7% or 10.329 billion ringgit of the allocated funds were used up under the Seventh Malaysia Plan (PWD Expenditure, 2000). The Department had implemented since late 1999, between 10 to 15 new revised procedures to ensure greater

efficiency. Thus this has resulted in fewer project overruns comparatively to previous years (Star, 2000).

### **1.1.2 Project Management Rationale**

In the last thirty years there has been a tidal wave of interest in project management as a management philosophy to use in dealing with the many ad hoc activities found in contemporary organizations. Cleland & Roland (1994), points out that project management is recognized as a principal strategy and process to deal with the inevitable change facing organizations. The social, political, economic, technological, and competitive changes underway in the global marketplace require that any organization wishing to survive in face of such change needs to understand how such change can be managed.

As such the content of this research work will point out that architectural practice now have a special opportunity to bring new knowledge into the profession, especially seeking beneficial models of management to its needs. These models of project management must be sufficiently robust to accommodate issues in the architectural design profession, be it in the public or private practice. There are dangers in simply applying traditional management principles to the phenomenon of design. It requires a different kind of architectural activity, one that involves managerial approach that can transcend the formality and limitations of structured rule-systems. Thus a contemporary architectural design practice need to become more adaptive and need to find ways to tap into newly

emerging innovative project management principles as what other participants in the building process do.

The federal governments are no stranger to project management applications. After all, it was the U.S. Navy in the late 1950s that pioneered the network diagramming approach for planning, scheduling, and controlling projects (Spinner, 1997 ).

The quality of design has, undoubtedly, an extensive impact on all subsequent stages of a project's life cycle. Producing a quality design is highly dependent upon effective coordination among many teams, including the architectural, structural, electrical, and mechanical. However there are limitations and even drawbacks, particularly the time required to complete construction of public projects is frequently greater than the time specified in the contracts. The overruns are due to many reasons such as vague project briefs by the clients, design changes, or errors, user changes, incompetent contractors' time management weaknesses, and late deliveries. Despite the necessity for this research, little work has been done and described in literature concerning public sector's building projects (Al-Momani, 2000 ).

Ghaleb and Hashim ( 2000), points out that in developing countries the implementation of project management techniques and tools are still in its early phases of development. Besides this, several social, cultural, political and financial problems leads to poor management performance. In another related research work (Chalabi & Camp 1984 ), the findings points



out that projects delays in developing countries are during planning and construction stages. Hence, delays and cost overruns of construction project are dependent entirely on the very early stages of the project lifecycle.

The existence of different social, cultural, political and financial problems in developing countries has prompted the researcher to examine the project management principles adopted in the public sector's building projects in Malaysia, even though there were other related studies done in other developing countries. Therefore, the strategy for implementing project management in developing countries must be consistent with cultural and characteristics of the particular society and configuration of its economic, political and administrative system (Ghaleb and Hashim, 2000).

## **1.2 Research Objectives**

The goal of this study is to investigate the relevancy of project management phenomena, its fundamental principles in practice in the public sector's architectural organization. The aim of the study is also to ascertain how the fundamental principles of project management are applied and adopted for the public sector's architectural practice. Thus, the study is intended to investigate the adoptability and relevancy of project management principles in the public sector's architectural design practice.